Conference on Economic Impact Modeling of Greenhouse Gas Emission Reduction Market and Non-Market Based Strategies

The California Air Resources Board will hold a Conference on Economic Impact Modeling of Greenhouse Gas Emission Reduction Market and Non-Market Based Strategies. The details for this conference are as follows:

November 29, 2006
Coastal Hearing Room, 2nd Floor
Cal/EPA Building
1001 I Street
Sacramento, CA 95812
Directions and transportation options
(http://www.calepa.ca.gov/EPABldg/location.htm)

The conference will bring together modeling experts, members of industry, environmental groups, and government agencies who have an interest in the implementation of greenhouse gas policy in California.

The primary objective of this conference is to collect information on the methods and tools available that can be used by the ARB to better assess the economic impacts to California of implementing traditional regulatory approaches and non-traditional market-based approaches to controlling greenhouse gases. In the morning a series of experts will present and discuss their respective models followed by a question and answer period. The focus of these presentations will be on identifying the elements that are common among the various models along with highlighting the differences and explaining what these differences might mean in terms of the projected economic impacts. In the afternoon, there will be a panel discussion that will cover two topics, 1) what are the pros and cons of using the different models to analyze the economic impacts of greenhouse gas policy mitigation strategies, and 2) what is the applicability of these models to analyzing the economic impacts of market-based compliance strategy?

Models

The following is a brief description of the models that will be presented at the conference. Where applicable, links to web pages that contain the documentation and other analyses performed using these models are provided.

Environmental Revenue Dynamic Assessment Model (E-DRAM)

The Environmental Revenue Dynamic Assessment Model **(**E-DRAM) (http://www.arb.ca.gov/cc/112906conf/e-dram.pdf) is a computable general equilibrium (CGE) model of the California economy developed Dr. Peter Berck at the University of California, Berkeley. E-DRAM was originally developed to assess the revenue impacts of tax and other State policies for the Department of Finance. It has subsequently been used by the by the California Energy Commission and ARB to assess impacts of reducing petroleum dependency

(AB2076), and by ARB for the Vehicle Climate Change Standards, the State Implementation Plan analysis, and the previous Climate Action Team analysis.

An example of analysis performed with the E-DRAM is available in *California Environmental Protection Agency Climate Action Team Report to Governor Schwarzenegger and the Legislature* located at: http://www.climatechange.ca.gov/climate_action_team/reports/2006-04-03_FINAL_CAT_REPORT.PDF

Berkeley Energy and Resources (BEAR) Forecasting Model

The Berkeley Energy and Resources (BEAR) (http://www.arb.ca.gov/cc/112906conf/bear.pdf) is a dynamic CGE model developed Dr. David Roland-Holst at UC Berkeley. The model is designed to support a broad spectrum of policy analysis, including energy policy and policy responses to climate change such as trading and offset mechanisms. BEAR differs from E-DRAM by explicitly tracking the path of development of the economy over time as policies are implemented. The BEAR model has previously been used to assess the economic impacts of California greenhouse gas control policies.

An example of analysis performed with the BEAR model is available in *Chapter 2: Economic Assessment of some California Greenhouse Gas Control Policies: Applications of the BEAR Model in Managing Greenhouse Gas Emissions in California by the California Climate Change Center University of California at Berkeley* located at: http://calclimate.berkeley.edu/2_Economic_Assessment.pdf

Charles River Associates Multi-Region National North American Electricity and Environment Model (MRN-NEEM)

Charles River Associates International (CRAI) has developed a fully integrated top-down bottom-up model – MRN-NEEM (http://www.arb.ca.gov/cc/112906conf/mrn_neem.pdf) – to perform climate change and environmental policy analyses. This integrated model combines a top-down, general equilibrium model (MRN) of the entire economy with a bottom-up, quadratic programming model (NEEM) of the electricity sector.

The Multi-Regional National (MRN) model is multi-regional forward looking dynamic computable general equilibrium model of the United States. The North American Electricity and Environment Model (NEEM) is a partial equilibrium model of the North American electricity market that can simultaneously model system expansion and environmental compliance. The model employs detailed unit-level information on all of the generating units in the U.S. and large portions of Canada.

The MRN-NEEM integrated model has been employed to analyze the economic impacts of state and national level climate change policies. For one client, we

analyzed the impacts on California's economy and electricity sector of alternate implementations of California's Assembly Bill 32. The model estimated the effects of different implementations of cap and trade policies as well as renewable portfolio standards. For other clients, we looked at the macroeconomic impact of nationwide carbon tax and cap and trade policies on individual states and the entire U.S. These analyses investigated the impacts on broad non-energy sectors and the energy markets and looked in detail at electricity capacity and generation decisions throughout the U.S

An example of analysis performed with the CRA MRN is available in *The Full Costs of S.139, With and Without its Phase II Requirements* located at: http://www.crai.com/.%5Cpubs%5Cpub_3694.pdf

Regional Economic Models, Inc. (REMI), Policy Insight

Regional Economic Models (REMI) (http://www.arb.ca.gov/cc/112906conf/remi.pdf) Policy Insight is a structural economic forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric, and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to wage, price, and other economic factors. REMI models have been used by government organizations such as the US Environmental Protection Agency, the San Diego County Air Pollution Control District, and the South Coast Air Quality Management District. REMI models are customized by region and by the number of industry sectors and can be designed to represents a single county, the state, or the entire US.

Additional information can be found at:
http://www.remi.com/

Additional Information:

The agenda for the conference will be posted to the climate change website located at www.arb.ca.gov/cc/cc.htm by November 17, 2006. If you would like to receive an email notification when the agenda and other materials for this and future meetings is available, please sign up to our list serve by going to http://www.arb.ca.gov/lispub/listserv_grp.php?listtype=C0

Contact Information:

If you have any questions, please contact David Kennedy at 916.322-3935 or dkennedy@arb.ca.gov.